

Cooper Nuclear Uses Combination Switchgear-Genset Enclosure from Lectrus

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Lectrus recently completed a unique custom metal enclosure at Cooper Nuclear Station (CNS), Nebraska Public Power District's (NPPD) largest single unit electrical power generation station. CNS commissioned Interstate Power Systems – who in turn contracted with the Lectrus South Dakota Operation – to build a large, two-piece sound-attenuated metal enclosure for a backup diesel generator, switchgear and associated electrical equipment. The new diesel generator will supplement the station's two emergency diesel generators already in service.



CNS began commercial operation in 1974 and generates 810 megawatts of electricity. Water, heated by nuclear fission in the station's reactor, creates steam that drives the plant's turbine, creating the electrical output. In 2010, the plant served approximately 40 percent of NPPD's native load. It was also granted a 20-year operating license extension from the Nuclear Regulatory Commission.

This enclosure project represented the successful surmounting of several production extremes and challenges within a short turnaround timeframe. Interstate Power Systems supplied the 3.25MW diesel generator to Lectrus, who built the 15 ft wide x 58 ft long x 16 ft high sound attenuated metal enclosure.

The enclosure also included a 12,500 gallon sub-base fuel tank. Should standby power be called for at CNS, the 3.25MW diesel generator can be manually started and operated continuously under 100% rated electrical power output for up to 240 hours. The enclosure integrates IBC-rated seismic restraints to 1.5, can withstand maximum wind loads of 150 mph, 50-psi roof loads, 250-psi floor loads, and endure temperature extremes from -30°F to 120°F.



The walk-in, NEMA 3R metal enclosure also housed 4160V switchgear and a 150 kVA transformer. A unique feature of the combination two-piece, switchgear-genset enclosure is the use of sound-attenuated compartments attached on each side and accessible by four sets of stairs and ten NFPA-rated fire doors. A battery system supplies power for emergency lighting and a pre-lubrication system delivers optimal engine protection during initial startup. An automated fuel maintenance system

provides delivery of 99.5% pure diesel fuel to power the generator. In addition, the combination switchgear-genset enclosure contains engine heating & cooling systems, engine oil heating, exhaust silencer, full software security, fully automated alarm systems, and a life-safe Inergen fire suppression system. To assist in general maintenance activities and component lifting within the enclosure, the unit contains a manually operated, indoor overhead bridge crane with one-half ton capacity.

In summary, Interstate Power Systems and Lectrus teamed to produce a fully integrated and highly specialized enclosure that easily meets the power and reliability requirements, life safety mandates and other risk mitigation factors that naturally exist in this branch of the power generation industry.